

SUPPRESSED DISCOVERIES IN PHYSICS

*The "rock-solid"
foundations of
physics are
increasingly being
undermined by
emerging evidence
that challenges
"established"
theories, but the
scientific orthodoxy
is in denial.*

Part 2 of 2

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© December 2003 – February 2004

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DOUBTS ABOUT VALIDITY OF RELATIVITY THEORY

Silvertooth's Experiment on the Earth's Absolute Motion

In a 1986 letter to *Nature*,⁴⁴ Ernest W. Silvertooth writes that he constructed an interferometer capable of detecting the absolute motion of the Earth with respect to the aether. In "Experimental Detection of the Ether"⁴⁵ and "Motion through the Ether",⁴⁶ Silvertooth reports that, on the particular day of his measurements, the Earth moved at 378 km/s towards the constellation Leo. If relativity is correct, then this result should be complete garbage.

Silvertooth published his findings before NASA launched *COBE*, the first satellite to measure accurately the cosmic microwave background (CMB). Due to Doppler shift, there is a slight anisotropy in the spectrum of the CMB. Based on precise measurements of this anisotropy, it was determined that, relative to the CMB, the heliocentric frame moves at 390 km/s towards Leo. Given the Earth's orbital speed of 30 km/s, this is a very good agreement with Silvertooth's measurement. In a refined experiment, Silvertooth and Whitney⁴⁷ confirmed the earlier result and found a speed of $v = 378$ km/s.

A citation search through ISI Web of Science⁴⁸ reveals no references to any of Silvertooth's papers in the mainstream scientific literature. An online document⁴⁹ briefly mentions his work and dismisses it on the grounds that both the experiment and the theoretical analysis are flawed; but, given how well Silvertooth's result agrees with the independently determined motion of the Earth through the CMB, error seems to be an insufficient explanation. Unless Silvertooth committed outright fraud by simply making a lucky guess as to the Earth's velocity relative to the CMB and then ascribing this guess to an imaginary experiment, the inescapable conclusion would be that translation (i.e., movement with constant speed in physics) can be measured by purely electromagnetic means and that Einstein's theory of special relativity is falsified.

Is the Speed of Light in Interplanetary Space a Constant?

The late physicist Bryan G. Wallace discovered in 1961 that radar distance measurements of the surface of the planet Venus did not confirm the constancy of the speed of light. There were systematic variations in the radar data containing diurnal, lunar and synodic components. Attempting to get his results published in *Physical Review Letters*, he encountered great resistance from referees, and eventually settled for a lesser journal.⁵⁰ In a letter to *Physics Today*, Wallace summarises his findings as follows:⁵¹

"The 1961 interplanetary radar contact with Venus presented the first opportunity to overcome technological limitations and perform direct experiments of Einstein's second postulate of a constant light speed of c in space. When the radar calculations were based on the postulate, the observed-computed residuals ranged to over 3 milliseconds of the expected error of 10 microseconds from the best general relativity fit the Lincoln Lab could generate, a variation range of over 30,000%. An analysis of the data showed a component that was relativistic in a $c + v$ Galilean sense."

Let's do a quick reality check here. If the speed of light in interplanetary space is non-constant, how could NASA not have noticed this in its robotic exploration of the solar system? Wallace makes the scandalous claim that NASA *has* noticed, and has been using equations with non-relativistic components to calculate signal transit times in the solar system all along.⁵²

"At the December 1974 AAS [American Astronomical Society] Dynamical Astronomy Meeting, E. M. Standish, Jr, of JPL reported that significant unexplained systematic

variations existed in all the interplanetary data, and that they are forced to use empirical correction factors that have no theoretical foundation."

In a 1973 paper,⁵³ Wallace describes how the Lincoln Lab introduced averaging to suppress the anomalous radar results and refused to release the raw data to him, stonewalling his investigation:

"The apparent improvement in the residuals for later years was due to the fact that the Lab interpolated the 1964 Venus data to 12:00 UT and the 1967 data to one observation a day from 2:12 UT to 2:21 UT. The observing time for the 1961 data ranged from 00:33 UT to 23:40 UT. The involved radar astronomers are publicly claiming nearly complete agreement between their recent radar analysis and general relativity, but my investigation reveals otherwise.

"At the Fourth Texas Symposium of Relativistic Astrophysics, I. I. Shapiro of the Lincoln Lab promised to send me any data I wanted. I read in an article published by the Lab that they had data for the same observing dates covering a wide range of daily observing times from both the MIT and USSR radar stations. I wrote Shapiro requesting this data 2/13/69; his letters of 2/28/69 and 3/12/69 ignored my request. I made an issue of this in my letter to him of 3/20/69, and in his reply of 3/27/69 he stated, 'Unfortunately the data do not exist in the form in which you wanted them and, hence, I cannot honor your request.'

"Shapiro later sent me data that were completely worthless for making an objective test of the relative velocity of light in space. The data were from two MIT radar stations in Massachusetts. The separation between them was only 0.2' of longitude and 20.6" of latitude and the observations had been interpolated to 2:12 UT to 2:21 UT with only one observation per day. It seems obvious that the Lab eliminated the variations by interpolating the data for each day to the one observing time for that day that agreed with the general relativity prediction. One could use the same method to prove that a stopped clock keeps perfect time."

A subsequent letter submitted to *Physics Today* on July 9, 1984, was denied publication. Wallace has reproduced this letter in the Publication Politics chapter of his online book, *The Farce of Physics*.⁵⁴ In it, he writes:

"The speed of light is $c + v$ "...

"During a current literature search, I requested and received a reprint of a paper (T. D. Moyer, *Celes. Mech.* 23:33 [1981] published by Theodore D. Moyer of the Jet Propulsion Laboratory. The paper reports the methods used to obtain accurate values of range observables for radio and radar signals in the solar system. The paper's (A6) equation and the accompanying information that calls for evaluating the position vectors at the signal reception time is nearly equivalent to the Galilean $c + v$ equation (2) in my paper, "Radar Testing of the Relative Velocity of Light in Space" (B. G. Wallace, *Spectros. Lett.* 2:361 [1969]). The additional terms in the (A6) equation correct for the effects of the troposphere and charged particles, as well as the general relativity effects of gravity and velocity time dilation.

"The fact that the radio astronomers have been reluctant to acknowledge the full theoretical implications of their work is probably related to the unfortunate things that tend to happen to physicists that are rash enough to challenge Einstein's sacred second postulate. Over twenty-three years have gone by since the original Venus radar experiments clearly showed that the speed of light in space was not constant, and still the average scientist is not aware of this fact! This demonstrates why it is important for the APS [American Physical Society] to bring true scientific freedom to the *PR* [*Physical Review*] journal's editorial policy."

Supporting evidence comes from Ronald Hatch, who finds that the NASA equations for interplanetary navigation follow his MLET theory rather than special relativity:⁵⁵

"The experimental evidence is almost overwhelming in support of the MLET view. There is a large disjoint between the SRT theorists and the experimentalists. The SRT theorists continue to claim that the speed of light is automatically the velocity c and isotropic with respect to the moving observer or experiment. But the SRT experimentalists do what is necessary to explain and make sense of the measurements. The equations for tracking and navigating the interplanetary probes developed by the Jet Propulsion Laboratory (JPL) for NASA clearly follow the MLET template."

Mr Wallace died on April 19, 1997, his findings ignored and thus neither confirmed nor refuted by the physics establishment. The question remains: Is the speed of light in interplanetary space subject to systematic variations in time?

It is therefore imperative that systematic, high-precision speed-of-light experiments be performed in Earth orbit and interplanetary space. No such experiments have been carried out yet (why test a theory that you already know is correct?) but majority opinion has been changing lately. Attempts to reconcile general relativity with

quantum theory have been a notable failure, and physicists have come to suspect that a unified field theory must involve "small" violations of special and general relativity.

Müller et al. state:⁵⁶

"Special relativity (SR) underlies all accepted theories of nature at the fundamental level. Therefore, it has been and must be tested with ever-increasing precision to provide a firm basis for its future application. Such tests are also motivated by the efforts to unify gravity with the other forces of nature, one of the outstanding open challenges in modern science. In fact, many currently discussed models of quantum gravity do violate the principles of SR."

This has finally created a renewed interest in testing both relativity theories experimentally to high precision. German physicists are currently designing the OPTIS mission,⁵⁷ a satellite carrying ultra-high-precision experiments to test key assumptions and predictions of relativity—among them, the isotropy and constancy of the speed of light. As expected, the OPTIS mission objective is to confirm special and general relativity, or, at most, to find weak violations:⁵⁸

"New unifying theories (e.g., the String Theory) predict small deviations from the Special and General Relativity. If such deviations could be found (e.g., an anisotropy of the speed of light), the

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way to a new understanding of the time and space structure of the universe would be open."

The motivation to conduct such experiments in Earth orbit is solely due to technological considerations and has nothing to do with the dissident argument that space-based tests of special relativity might produce radically different results than ground-based ones. But if Dayton Miller and other relativity critics are right, OPTIS may find much more than small deviations.

As of February 2004, it is still uncertain whether OPTIS will receive necessary funding. The journal *Nature* gives the following update:⁵⁹

"OPTIS has received funding from the German Space Agency, and [project scientist] Schiller hopes for support from the European Space Agency (ESA). 'The central technology issues could be worked out in about four years,' he says—but the project hangs in the balance, pending the nod from ESA. Other space-based searches for Lorentz violation are planned for the International Space Station. These include both Michelson–Morley-type experiments and ones involving atomic clocks. The earliest launch date for any of these is 2005."

Evidence for Superluminal Signals

There is some evidence for the existence of superluminal signals in nature, which contradicts the special relativistic idea that such signals violate causality and are therefore impossible.

W. A. Rodrigues, Jr and others have constructed formal solutions with arbitrary speeds $0 < v < c$ of the main relativistic wave equations.⁶⁰ They call these solutions *undistorted progressive waves* (UPWs). These formal solutions have infinite energy and can therefore not exist in reality; however, numerical simulations and experiments with sound waves suggest that so-called finite

aperture approximations to these waves can be generated.⁶¹ Such has been done, however, in all the finite aperture approximations experimentally produced, only the peaks move superluminally; the wave fronts move at c , excluding the possibility of superluminal signalling.⁶²

In "Finite energy superluminal solutions of Maxwell equations",⁶³ de Oliveira and Rodrigues show that genuinely superluminal, finite-energy vacuum solutions of Maxwell's equations exist, which unfortunately cannot be produced by a finite antenna. The authors state, however, that "even if the new superluminal solutions cannot be produced by physical devices, the only possible reason for their non-existence in our universe is that of a possible violation of the principle of relativity".

Thomas Van Flandern shows in a series of papers that the force of gravity must act in exactly the same fashion as it is calculated by astronomers; that is, near instantaneously. Otherwise, angular momentum would no longer be conserved and planetary orbits would be unstable. In "The Speed of Gravity – What the Experiments Say",⁶⁴ he writes:

"Standard experimental techniques exist to determine the propagation speed of forces. When we apply these techniques to gravity, they all yield propagation speeds too great to measure, substantially faster than lightspeed. This is because gravity, in contrast to light, has no detectable aberration or propagation delay for its action, even for cases (such as binary pulsars) where sources of gravity accelerate significantly during the light time from source

to target. By contrast, the finite propagation speed of light causes radiation pressure forces to have a non-radial component causing orbits to decay (the "Poynting-Robertson effect"); but gravity has no counterpart force proportional to v/c to first order.

"General relativity (GR) explains these features by suggesting that gravitation (unlike electromagnetic forces) is a pure geometric effect of curved space-time, not a force of nature that propagates. Gravitational radiation, which surely does propagate at lightspeed but is a fifth-order effect in v/c , is too small to play a role in explaining this difference in behavior between gravity and ordinary forces of nature. Problems with the causality principle also exist for GR in this connection, such as explaining how the external fields between binary black holes manage to continually update without benefit of communication with the masses hidden behind event horizons.

"These causality problems would be solved without any change to the mathematical formalism of GR, but only to its interpretation, if gravity is once again taken to be a propagating force of nature in flat spacetime with the propagation speed indicated by observational evidence and experiments: not less than $2 \cdot 10^{10} c$.

"Such a change of perspective requires no change in the assumed

character of gravitational radiation or its lightspeed propagation. Although faster-than-light force propagation speeds do violate Einstein[ian] special relativity (SR), they are in accord with Lorentzian relativity, which has never been experimentally distinguished from SR—at least, not in favor of SR. Indeed, far from upsetting much of current physics, the main changes induced by this new perspective are beneficial to areas where physics has been struggling, such as explaining experimental evidence for non-locality in quantum physics, the dark matter issue in cosmology, and the possible unification of

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forces. Recognition of a faster-than-lightspeed propagation of gravity, as indicated by all existing experimental evidence, may be the key to taking conventional physics to the next plateau."

In a 2002 paper,⁶⁵ Van Flandern and Vigier extend these results and conclude that the alleged Einstein "general speed limit" of c must be invalid. It must be understood that if the existence of instantaneous signals (rather than "just" superluminal ones) were confirmed, this would instantly invalidate special relativity, which is founded on the impossibility of synchronising two distant clocks by means of an instantaneous signal.

Suppression of a Flaw in Quantum Theory

D. L. Hotson shares the following suppression story in "Dirac's Equation and the Sea of Negative Energy"⁶⁶ (talking about himself in the third person):

"...Unfortunately, he could not resist asking awkward questions. His professors taught that conservation of mass–energy is the never-violated, rock-solid foundation of all physics. In 'pair production', a photon of at least 1.022 MeV 'creates' an electron-positron pair, each with 0.511 MeV of rest energy, with any excess being the momentum of the 'created' pair. So supposedly the conservation books balance.

"But the 'created' electron and positron both have spin (angular momentum) energy of $\hbar/4\pi$. By any assumption as to the size of electron or positron, this is far more energy than that supplied by the photon at 'creation'.

"Isn't angular momentum energy?" he asked a professor.

"Of course it is. This half-integer spin angular momentum is the energy needed by the electron to set up a stable standing wave around the proton. Thus it is responsible for the Pauli exclusion principle, hence for the extension and stability of all matter. You could say it is the sole cause of the periodic table of elements."

"Then where does all this energy come from? How can the "created" electron have something like sixteen times more energy than the photon that supposedly "created" it? Isn't this a huge violation of your never-violated, rock-solid foundation of physics?"

"We regard spin angular momentum as an "inherent property" of [the] electron and positron, not as a violation of conservation."

"But if it's real energy, where does it come from?..."

"Inherent property" means we don't talk about it, and you won't either if you want to pass this course."

"Later, Mr Hotson was taken aside and told that his 'attitude' was disrupting the class, and that further, with his 'attitude', there was no chance in hell of his completing a graduate program in physics, so 'save your money'."

"He ended up at the Sorbonne studying French literature and later became a professional land surveyor."

THE BIG BANG SCANDAL

Big Bang cosmology, which is built on general relativity theory, is forced to use a number of adjustable parameters and *ad hoc* assumptions to agree with observation, such as inflation, the assumption that most of the mass of the universe must consist of "dark matter"—a kind of matter that cannot be detected, but nevertheless must exist for the sole reason that Big Bang theory requires it—and now the latest fad, "dark energy".

Two of the three vaunted "predictions" of Big Bang theory—the light element abundances and the temperature of the microwave background—are actually *retrodictions*, meaning that the theory failed to predict them quantitatively correctly and was then adjusted after the data came in so as to fit the observational evidence.⁶⁷

The third "prediction"—the Hubble expansion—is entirely a figment of the imagination, as veteran astronomer Halton Arp has pointed out for decades. There are ample examples of high-redshift quasars that are physically connected to low-redshift galaxies, and there is evidence that redshift is quantised. But astronomy has failed to self-correct, and the only acknowledgement Arp received from the scientific establishment was to be largely (though not completely⁶⁸) banned from publication in scientific journals or from speaking at conferences, and to be denied telescope time. He gives details in *Quasars, Redshifts, and Controversies*.⁶⁹

"Around 1980, I had tried to make a customary tennis date with an old and valued Caltech friend who had been a longtime opponent on the subject of quasars. He was embarrassed and evasive. On the following day, the six-person allocation committee, of which he was a member, sent me an unsigned letter stating that my research was judged to be without value and that they intended to refuse allocation of further observing time..."

"A number of directors of other observatories as well as other well-known astronomers communicated to the director of my observatory, strongly supporting my research and opposing the

action of the allocation committee. I challenged members of the committee to debate the actual scientific facts. But none of this prevented the inevitable last act. My observations on the 200-inch telescope at Palomar terminated in 1983, and at Las Campanas in 1984."

Arp found scientific asylum at the Max Planck Institut für Astrophysik in Munich, Germany, where he was allowed to continue his work. But the suppression continued. In *Seeing Red: Redshifts, Cosmology and Academic Science*, Arp relates the following story:⁷⁰

"Just another isolated case.' Your eye slid over that phrase because you wanted to see whether the referee was going to recommend publication. The answer was: 'not for the *Astrophysical Journal Letters*'. The message behind the smooth, assured phrase was clear: 'No matter how conclusive the evidence, we have the power to minimize and suppress it'. What was the observation this time? Just two X-ray sources unmistakably paired across a galaxy well known for its eruptive activity. The paper reported that these compact sources of high-energy emission were both quasars, stellar-appearing objects of much higher redshift than the central galaxy, NGC4258. Obviously, they had originated from the galaxy, in contradiction to all official rules. Slyly, the referee remarked that 'because there was no known cause for such intrinsic, excessive redshifts, the author should include a brief outline of a theory to explain them'."

"My mind flashed back through 30 years of evidence, ignored by people who were sure of their theoretical assumptions. Anger was my only honest option—but stronger than that provoked by worse 'peer reviews' because this was not even my paper. I did not have to stop and worry that my response was ruled by wounded personal ego."

"How did this latest skirmish begin? Several years earlier, an X-ray astronomer had come into my office with a map of the field around NGC4258. There were two

conspicuous X-ray sources paired across the nucleus of the galaxy. He asked if I knew where he could get a good photograph of the field, so he could check whether there were any optical objects that could be identified with the X-ray sources. I was very pleased to be able to swivel my chair around to the bookshelves in back of me and pull out one of the best prints in existence of that particular field. I had taken it with the Kitt Peak National Observatory 4-meter telescope about a dozen years previously..."

"Wolfgang Pietsch quickly found a small pointing correction to the satellite positions and established that his X-ray pair coincided with blue stellar objects at about 20th apparent magnitude. At that instant I knew that the objects were almost certainly quasars, and once again experienced that euphoria that comes at the moment when you see a long way into a different future. In view of the obvious nature of these objects, I felt Pietsch showed courage and scientific integrity in publishing the comment: 'If the connection of these sources with the galaxy is real, they may be bipolar ejecta from the nucleus'."

Arp then describes how establishment obstruction delayed the necessary confirmatory observation for two years.

"Then the dance of evasion began. It was necessary to obtain optical spectra of the blue stellar candidates to confirm that they were quasars and ascertain their redshifts. A small amount of time

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was requested on the appropriate European telescope. It was turned down. Pietsch's eyes avoided mine when he said, 'I guess I did not explain it clearly enough'. The Director of the world's largest telescope in the US requested a brief observation to get the redshifts. It was not done. The Director of the X-ray Institute requested confirmation. It was not done.

"Finally, after nearly two years, E. Margaret Burbidge with the relatively small 3-meter reflector on Mount Hamilton, on a winter night against the night sky glow from San Jose, recorded the spectra of both quasars. It was fortunate that mandatory retirement had been abolished in the US because, by this time, Margaret had over 50 years of observing experience. Of course, the referee report from which I quoted was directed against her paper, which reported this important new observation. In her firm but lady-like English way, Margaret withdrew her paper from the *Astrophysical Journal Letters* and submitted it to the European journal *Astronomy and Astrophysics Letters*."

Arp concludes and generalises:

"What was particularly appalling about this series of events was that Margaret Burbidge was someone who had given long and distinguished service to the scientific community: Professor at the University of California, Director of the Royal Greenwich Observatory and President of the American Association for the Advancement of Science, among other contributions. It seems it was permissible to let her fly anywhere in the world doing onerous administrative tasks, but her scientific accomplishments were not to be accorded elementary scientific respect and fair treatment.

"Some would argue that this is a special case, owing to the climate of opinion where the offices of the *Astrophysical Journal Letters* are located. But, as events in the following chapters make clear, the problem is pervasive throughout astronomy and, contrary to its projected image, endemic throughout most of current science. Scientists, particularly at the most prestigious institutions, regularly suppress and ridicule findings which contradict their current theories and assumptions."

G. Burbidge gives the following devastating summary of the anti-scientific conduct of the astrophysical establishment:⁷¹

"The existence of a class of objects which have redshifts not largely due to the cosmic expansion was not predicted either in the hot big bang cosmology or in QSSC. How is this phenomenon dealt with in each hypothesis? As far as that big bang model is concerned, its supporters are in complete denial. They never mention the observational evidence, do not allow observers who would like to report such evidence any opportunity to do this in cosmology conferences, argue against its publication, and if forced to comment on the data simply argue that they are wrong."

Thomas Van Flandern's recent paper, "The Top 30 Problems with the Big Bang",⁷² gives an overview of problems with Big Bang cosmology and concludes:

"The Big Bang...no longer makes testable predictions wherein proponents agree that a failure would falsify the hypothesis. Instead, the theory is continually amended to account for all new, unexpected discoveries. Indeed, many young scientists now think of this as a normal process in science! They forget, or were never taught, that a model has value only when it can predict new things that differentiate the model from chance and from other models

before the new things are discovered. Explanations of new things are supposed to flow from the basic theory itself with, at most, an adjustable parameter or two, and not from add-on bits of new theory.

"...Perhaps never in the history of science has so much quality evidence accumulated against a model so widely accepted within a field. Even the most basic elements of the theory, the expansion of the universe and the fireball remnant radiation, remain interpretations with credible alternative explanations. One must wonder why, in this circumstance, four good alternative models are not even being comparatively discussed by most astronomers."

One of these models is Quasi-Steady State Cosmology (QSSC), proposed in 1993 by Hoyle, Burbidge and Narlikar.^{73,74}

THE ANTIGRAVITY CONTROVERSY

In 1992, Russian scientist Eugene Podkletnov published claims to have observed partial gravitational shielding above a rotating superconductor.⁷⁵ The scientific establishment reacted with scorn and dismissed the claims on *a priori* grounds:⁷⁶

"Most physicists laughed at Podkletnov's report. Riley Newman, a professor of physics at UC Irvine who has been involved in gravity research for 20 years, typified the reaction when he commented, 'I think it's safe to say gravity shielding is not conceivable'. Like many scientists, he felt that Podkletnov must have made a mistake, measuring magnetic fields or air currents instead of genuine weight reduction.

"And yet, few of Podkletnov's critics actually bothered to read his description of his work. Their reaction was so dismissive, it almost sounded like prejudice. From their perspective he was an outsider, a nonmember of the 'gravity establishment'. They couldn't believe that a major discovery in physics had been made by such a no-status dilettante fooling around at some obscure lab in Finland."

Podkletnov's claims received major publicity in 1996, when the UK

Sunday Telegraph of September 1 reported that a follow-up paper was about to be published in the British *Journal of Physics D*. Podkletnov later withdrew the paper under curious circumstances, as *New Scientist* reports:⁷⁷

"But Podkletnov has now withdrawn the paper, just weeks before it was due to appear. His decision follows a bizarre series of developments triggered by media interest in the device. Earlier this month [September 1996], Tampere University issued a carefully worded statement denying all knowledge of the antigravity research. While admitting that it had been involved in some preliminary experiments done by Podkletnov in the early 1990s, the university said he was no longer on the staff.

"Suspensions deepened when Vuorinen, the supposed coauthor of the paper, issued a statement denying that he had ever worked on antigravity with Podkletnov.

"The furore appears to have surprised Podkletnov, who insists that the claims made in the paper are genuine. But he says the university is correct in denying the existence of any recent research, as the paper centres on experiments carried out in 1992.

"On the key issue of Vuorinen's denial of involvement in the work, Podkletnov says that there must have been some confusion over names, and that another Petri Vuorinen was the true coauthor. Podkletnov does have an unpaid affiliation with Tampere's Institute

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of Material Science. However, inquiries have failed to uncover anyone with a similar name at the university who admits to working on the antigravity research.

"The controversy also appears to have shocked the Institute of Physics, which publishes the *Journal of Physics D*. Three referees failed to find any major flaw in the paper's claims, which if confirmed would rate as one of the greatest scientific breakthroughs in history.

"Gravity is the most ubiquitous force in the Universe, and no one has ever found any way of shielding matter from its effects. The discovery of a shielding effect would have huge theoretical and commercial implications.

"Faced with Tampere University's statement and Vuorinen's denial that he was involved, Richard Palmer, managing editor of the journal, decided to put the paper on hold pending further inquiries. Three days later, on 9 September, Podkletnov solved the institute's dilemma by withdrawing his paper. He gave no reason. But he stands by his claims: 'This is an important discovery and I don't want it to disappear,' he told *New Scientist*.

"The paper may now never appear in any physics journal: Podkletnov is said to have been put under pressure from unknown 'funding agencies' not to reveal any more, pending patent applications.

"Even so, the mystery of the anti-gravity machine lingers. What is known is that the paper had passed scrutiny by independent experts in superconductivity, and had been accepted by a reputable journal. Tampere University itself concedes that Podkletnov has a good reputation for research, and refuses to pass judgement on whether the antigravity machine actually works..."

Podkletnov was subsequently thrown out of the university. But despite the controversy, NASA's Marshall Space Flight Center in Alabama decided to investigate his claims.⁷⁸

The first attempt at replication failed, but it had been conducted without sufficient knowledge of the original experiment.⁷⁹ As of 2002, NASA was still working on a second attempt.

Podkletnov now says that he can generate repulsive force beams. According to Nick Cook:⁸⁰

"Meanwhile, Mr Podkletnov, now based at the Moscow Chemical Scientific Research Centre, has taken his ideas further. Last year [2001] he published another paper—backed by Giovanni Modanese, an Italian physicist—detailing work on an 'impulse gravity generator' that is capable of exerting a repulsive force on all matter.

"Using a strong electrical discharge source and a superconducting 'emitter', the equipment has produced a 'gravity impulse', Mr Podkletnov says, 'that is very short in time and propagates with great speed (practically instantaneously) along the line of discharge, passing through different objects without any observable loss of energy'.

"The result, he maintains, is a repulsive action on any object the beam hits, that is proportional to its mass. When fitted to a laser pointing device, Mr Podkletnov says, his laboratory installation has already demonstrated its ability to knock over objects more than a kilometre away. The same installation, he maintains, could hit objects up to 200 km away with the same power."

These claims caught the attention of aerospace company Boeing, which has been reported to be researching antigravity.

Whether antigravity will ultimately be proven to exist or not, one thing is already clear: mainstream physics is unwilling to investigate antigravity claims in good faith. Robert L. Park, the spokesman of the American Physical Society, made a typical comment in his What's New column in 2002 that illustrates the unscientific "theory overrides evidence" *modus operandi* of the physics establishment:⁸¹

"Why would Boeing choose to spend millions to test a ridiculous claim by an obscure Russian physicist that has failed every test and is a physical impossibility to begin with?"

THE SECOND LAW UNDER SIEGE

In simple language, the second law of thermodynamics says that, in a closed physical system, useful energy decays into waste heat and you can't win it back.

A machine that produces, say, electrical energy from ambient heat is impossible according to the second law, and is termed a "perpetuum mobile of the second kind".

But the second law is under siege, and it may turn out that this alleged rock-solid law of nature is only a reflection of the limitations of 19th and 20th century engineering.

In a paper titled "A Solid-State Maxwell Demon",⁸² D.P. Sheehan and A.R. Putnam of the Department of Physics and J.H. Wright of the Department of Mathematics and Computer Science of the University of San Diego propose a semiconductor device that would generate useful energy from the thermal noise of an electronic circuit. The authors successfully tested their model on a commercial semiconductor simulator and estimate that the technology necessary to construct a laboratory model will be available by 2007. In their introduction, they write:

"Over the last ten years, an unprecedented number of challenges have been leveled against the absolute status of the second law of thermodynamics. During this period, roughly 40 papers have appeared in the general literature, representing more than a dozen distinct challenges; the publication rate is increasing. Recently, for the first time, a major scientific press has commissioned a monograph on the subject and a first international conference has been convened to examine these challenges."

One would think that, given the implications (defeating the second "law" means nothing less than solving the human energy crisis permanently), governments, corporations and the scientific establishment would be interested. But there is very little interest. The prevailing (circular) reasoning remains that machines that violate the second law are impossible because they would contradict the second law.⁸³

A NEW PARADIGM SHIFT

There is widespread belief among physicists and non-physicists alike that physics has essentially "figured out" the universe. According to this "end of science" argument,⁸⁴ all that remains to the great enterprise of science is to connect a few dots and do some fine-tuning. But this satisfactory state of affairs is a mere illusion

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created by the scientific establishment's habit of suppressing or ignoring disconfirming evidence.

The evidence discussed in this article suggests that the accepted picture of the universe, from the largest down to the very smallest elements, is wrong almost in its entirety and that a revolution in physics is overdue. This is bad news for mainstream physics, which is still under the delusion of getting closer to a "theory of everything", but good news for the rest of us.

Pick an anomalous phenomenon at random, and the odds are that science has dismissed it because it is "impossible according to the known laws of physics". This "paradigm paralysis" has caused and is still causing great suffering to humanity. Free, pollutionless energy from cold fusion, aether energy or environmental energy would permanently end our addiction to oil and allow the developing world to catch up. It would enable large-scale desalination of sea water and thus prevent the impending water crisis. Combined with antigravity, it would lead to a revolution in transportation and a renaissance of space exploration. It would enable

humanity to colonise the solar system and even travel to the stars. But none of these possibilities is even researched by mainstream science, since they are considered *a priori* impossible.

Another field that is profoundly affected by the current state of ignorance of mainstream physics is medicine. Non-toxic, cheap and effective modalities such as homoeopathy, acupuncture, energetic and spiritual healing remain on the fringes of medicine because they are premised on the existence of a vital energy (also known as *chi*, *ki*, *prana*, *orgone* and under many other names) which does not exist according to mainstream physics.

It is tempting to speculate that the suppressed aether is identical to this vital energy. If that speculation is correct, then the impending paradigm shift in physics will trigger a paradigm shift in medicine, biology and psychology.

Therapies and spiritual practices that have long been ridiculed as based on superstition and ignorance of the laws of nature will become scientifically accepted and widely used.

Parapsychology, no longer hampered by the inability of science to account for the

interconnectedness of life, will become a mainstream subject.

The ideology of ego-based materialism, which lies at the root of most problems facing our civilisation today, will collapse, as it will no longer be seen to be backed by the full faith and credit of modern science.

In short, the paradigm shift in physics will trigger a technological and spiritual transformation that will leave no aspect of human society untouched.

Endnotes

44. Silvertooth, E.W., "Special Relativity", *Nature* 322 (August 14, 1986)
45. Silvertooth, E.W., "Experimental Detection of the Ether", *Speculations in Science and Technology* 10(1) (1986)
46. Silvertooth, E.W., "Motion through the Ether", *Electronics & Wireless World*, May 1989, pp. 437-438
47. Silvertooth, E.W., Whitney, C.K., "A New Michelson-Morley Experiment", *Physics Essays* 5(1):82-88 (1992)
48. Thomson ISI Web of science, <http://www.isinet.com/products/citation/wos/> (subscription required)
49. Schleif, Siegmund and Roberts, Tom, "What is the experimental basis of SR?", <http://www.math.ucr.edu/home/baez/physics/Relativity/SR/experiments.html>

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50. Wallace, Bryan G., "Radar Testing of the Relative Velocity of Light in Space", *Spectroscopic Letters* 2:361 (1969)
51. Wallace, Bryan G., Letter to the Editor, *Physics Today* 34(8) (1981)
52. Wallace, Bryan G., Letter to the Editor, *Physics Today* 36(1) (1983)
53. Wallace, Bryan G., "The Unified Quantum Electrodynamical Ether", *Foundations of Physics* 3(3):381-388 (1973)
54. Wallace, Bryan G., *The Farce of Physics*, 1994 (published online)
surf.de.uu.net/bookland/sci/farce/farce_toc.html
55. Hatch, Ronald R., "A Modified Lorentz Ether Theory", *Infinite Energy* 7(39):14-23 (September/October 2001)
56. Müller, H., Herrmann, S., Braxmaier, C., Schiller, S., Peters, A., "Modern Michelson–Morley Experiment using Cryogenic Optical Resonators", *Physical Review Letters* 91(2) (July 11, 2003)
57. Available online at <http://www.exphy.uni-duesseldorf.de/OPTIS/optis.html>
58. Available online at <http://www.zarm.uni-bremen.de/2forschung/raumfahrt/optis/goals.htm>
59. *Nature*, vol. 427, o. pp. 482-484, 5 February 2004
60. Rodrigues, W.A., Jr and Maiorino, J.E., "A unified theory for construction of arbitrary speeds ($0 < v < c$) solutions of the relativistic wave equations", *Random Oper. and Stoch. Equ.* 4:355-400 (1996)
61. Rodrigues, W.A., Jr and Lu, J.Y., "On the Existence of Undistorted Progressive Waves (UPWs) of Arbitrary Speeds $0 < v < c$ in Nature", *Foundations of Physics* 27:435-508 (1997)
62. Maiorino, J.E. and Rodrigues, W.A., Jr, "What Is Superluminal Wave Motion?", *UNISAL Science & Technology Magazine* 2 (August 1999), available online at www.ime.unicamp.br/rel_pesq/1999/rp59-99.html
63. de Oliveira, E. Capelas and Rodrigues, W.A., Jr, "Finite energy superluminal solutions of Maxwell equations", *Physics Letters A* 291:367-370 (2001)
64. Van Flandern, T., "The speed of gravity – What the experiments say", *Physics Letters A* 250:1-11 (1998).
65. Van Flandern, T. and Vigier, J.P., "Experimental Repeal of the Speed Limit for Gravitational, Electrodynamic, and Quantum Field Interactions", *Foundations of Physics* 32:1031-1068
66. Hotson, D.L., "Dirac's Equation and the Sea of Negative Energy", *Infinite Energy* 8(43):37 (2001)
67. Van Flandern, T., "The Top 30 Problems with the Big Bang", *Apeiron* 9(2) (April 2002)
68. Arp, H. and Russell, D., "A Possible Relationship between Quasars and Clusters of Galaxies", *Astrophysical Journal* 549:802-819 (March 10, 2001)
69. Arp, H., *Quasars, Redshifts, and Controversies*, Cambridge University Press, 1989
70. Arp, H., *Seeing Red: Redshifts, Cosmology, and Academic Science*, Apeiron, 1998, pp. 9-12
71. Burbidge, G., "Quasi–Steady State Cosmology", <http://arxiv.org/abs/astro-ph/0108051> (Aug 2001)
72. Van Flandern, T., "The Top 30 Problems with the Big Bang", *ibid.*
73. Hoyle, F., Burbidge, G. and Narlikar, J.V., "A Quasi-Steady State Cosmological Model with Creation of Matter", *Astrophysical Journal* 410:437-457 (1993)
74. Burbidge, *ibid.*
75. Podkletnov, E. and Nieminen, R., "A Possibility of Gravitational Force Shielding by Bulk $YBa_2Cu_3O_7 - X$ Superconductor", *Physica C* 203(3-4):235-463 (December 10, 1992)
76. Platt, C., "Breaking the Law of Gravity", *Wired* 6(3) (March 1998), available online at <http://www.wired.com/wired/archive/6.03/antigravity.html>
77. Matthews, R., "Antigravity machine weighed down by controversy", *New Scientist*, 21 September 1996, p. 7
78. Holden, C., "NASA's Fling with Anti-Gravity", *Science* 274:183 (October 11, 1996)
79. Cook, N., "Boeing challenges the laws of physics", *Financial Times*, London, July 29, 2002
80. *ibid.*
81. Park, Robert L., What's New, August 2, 2002, <http://www.aps.org/WN/WN02/wN080202.html>
82. Sheehan, D.P., Putnam, A.R. and Wright, J.H., "A Solid-State Maxwell Demon", *Foundations of Physics* 32(10) (October 2002)
83. Maddox, John, "Maxwell's demon: Slamming the door", *Nature* 417:903 (27 June 2002)
84. Horgan, J., *The End of Science*, Little Brown & Company, UK, 1997

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